

Remarks/Arguments

Claims 1-20 are pending in this Application. In the Office Action mailed August 8, 2006, the Examiner on page 2 rejected Claims 18 and 19 under 35 U.S.C. § 112, first paragraph. On page 3 of the Office Action, the Examiner rejected Claims 1-18 under 35 U.S.C. § 103(a) as being unpatentable over Lamartine et al. (US Patent No. 6,136,071) in view of Berg (US Patent No. 2,544,214). On page 5 of the Office Action, the Examiner rejected Claims 19 and 20 under 35 U.S.C. § 103(a) as being unpatentable over Batelaan et al. (US Patent No. 5,434,208; herein "Batelaan") in view of either Holdcroft et al. (US Patent No. 5, 561,030; herein "Holdcroft") or Smith et al. (US Patent No. 6,605,236; herein "Smith").

Claims Rejections - 35 U.S.C. § 112, first paragraph

Claims 19-20 are rejected under 37 C.F.R. § 1.112, first paragraph. On page 2, of the Office Action, the Examiner states that the claims contain subject matter which was not described in the specification in a way to reasonably convey to one skilled in the art that the inventors had possession of the claimed invention at the time the application was filed. The phrase "by noncovalent forces" is said to not be supported by the specification and is said to be new matter. Applicant respectfully disagrees and points out that paragraph [00064] of the Substitute Specification filed January 9, 2004, describes "noncovalent forces" as a specific factor "responsible for reagent [NO⁺] release and for the reaction [calixarene-NO⁺ complexation] to occur." Claims 19 and 20 are further amended as to matters of form and to include one or more features believed to define the invention. No new matter is introduced with the amendments. Support for amended Claim 19 and 20 may be found in the specification, at, e.g., paragraphs [0006], [00015], [00039], [00043], [00050], and [00055] of the Substitute Specification. As such, Applicant respectfully requests the rejection under 37 C.F.R. § 1.112, first paragraph, be removed.

Claims Rejections - 35 U.S.C. § 103(a)

Claims 1-18 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Lamartine et al. (herein "Lamartine") in view of Berg. Applicant respectfully points out that neither Lamartine alone nor with Berg disclose essential features of the claimed invention. Importantly, neither Lamartine or Berg, alone or in combination, teach or suggest all the claim limitations as provided in Claims 1-18. Applicant further points out that not all nitrogen containing compounds are the same

and cannot be treated as such, as appears to be the position of the Examiner. For example, with reference to Lamartine, the reference specifically teaches only the recovery of NH- and SH-containing compounds released as bad smelling gases. Lamartine does not suggest or describe low molecular weight nitrogen oxides, particularly those capable of producing nitrosonium ions. The “not exhaustive” list that the Examiner points to in Col. 2, ll. 32-37 and 51-61 of Lamartine still require amines (N-H) or hydrogen sulfides and thiols (S-H) for providing the bad smell and cannot be construed to mean anything else than that disclosed by Lamartine’s specification. One of ordinary skill would never construe bad smelling gases of “ammonia, lower alkyl amines such as mono, di and trimethyl amine, mono, di and triethyl amine; and sulfur containing compounds such as hydrogen sulfide, lower organic thiols (mercaptans) such as methanethiol, ehtanethiol, propanethiol, and sulfides such as dimethylsulfide and diethylsulfide” (Col 2, ll. 51-61) that are the disclosed gases referred to by Lamartine to include nitrogen oxides that produce nitrosonium oxides. Furthermore, one of ordinary skill would never use the disclosure of Lamartine to detect anything but bad smelling gases of “ammonia, lower alkyl amines such as mono, di and trimethyl amine, mono, di and triethyl amine; and sulfur containing compounds such as hydrogen sulfide, lower organic thiols (mercaptans) such as methanethiol, ehtanethiol, propanethiol, and sulfides such as dimethylsulfide and diethylsulfide,” which, again, are not nitrogen oxides that produce nitrosonium oxides. Moreover, in contradition to the assumption made by the Examiner on page 2 that Lamartine discloses “employing calix[4]arene compounds (column 5, about line 40), that may be used to purify fluid streams containing nitrogen-containing substances,” Lamartine actually teaches otherwise by stating that, “it has been found that amines are preferably adsorbed by calyx[8]arenes.” In fact, calixarenes taught by Lamartine (e.g., cols. 3 and 4) are not calix[4]arenes as disclosed in Applicants invention. In addition, contrary to the Examiner’s suggestion on page 4 that “Berg teaches that gaseous contaminants comprising oxides of nitrogen, hydrogen sulfide, ammonia, and the like occur together,” Berg does not state this at all. Rather, Berg is merely reciting that there is a varying “degree of adsorbability of gases on charcoal,” and suggests “gases of low critical temperature, such as hydrogen, nitrogen, oxygen, and carbon monoxide are adsorbed to a lesser degree than gases of higher critical temperature, such as chlorine, sulfur dioxide, hydrogen sulfide, ammonia, nitrous oxide, carbon dioxide, and the like.” This is in no way a conclusory statement that all gases or gaseous contaminants occur together nor that all gases or gaseous contaminants have similar properties, such as adsorbability; Berg provides only a mere observation that different gases adsorb to different degrees to charcoal. Accordingly, one cannot combine the teachings of Berg with Lamartine to make obvious Applicant’s invention. Because Berg does not

suggest or disclose that “oxides of nitrogen occur together with other low-molecular weight gaseous contaminants listed by Lamartine and have similar adsorbability characteristics,” as suggested by the Examiner on page 4, it would not have been obvious for one of ordinary skill in the art to use the “Lamartine device” with the teachings of Berg in order to provides Applicant’s claimed invention. Furthermore, neither Berg nor Lamartine provide a motivation or reason for one of ordinary skill to make such a connection or combination. For a showing of obviousness, there must be in the cited reference itself a motivation or reason for one of ordinary skill (without the benefit of Applicant’s specification) to make the connection or combination as suggested by the Examiner. [MPEP 2142-2144 and *Ex parte Chicago Rawhide Mfg. Co.*, 223 USPQ 351, 353 (Bd. Pat. App. & Inter. 1984)]. Without the suggestion or motivation, there can be no reasonable expectation of success. Accordingly, Claims 1-18 are not obvious over Lamartine in view of Berg.

Applicant is confused by the statement on page 4 in which the Examiner states, “The limitations of dependent claims. . . have each been given little patentable weight, since no nexus is seen between particular processes that result in the presence of NO contaminants in fluids and properties of the calixarene compounds utilized to sense, contain or purify NO⁺ from fluid mixtures containing same.” Applicant points out that the claimed invention includes a compound as a device for sensing, containing, and purifying NO_x compounds, the compound comprising a calix[4]arene compound. Accordingly, dependent claims and features that further define the compound, such as color change, stabilization, and complexation are, in fact, relevant to the compound as it is a feature of the device.

With this amendment, Applicants respectfully introduce amendments to Claims 1, 7, 11, 15, 16, 19 and 20, amendments considered to define the invention and are each supported by the specification. No new matter has been introduced with the amendments. Amendments, including those to Claim 1, are supported by the specification at, e.g., paragraphs [0006], [00015], [00035], [00036], [00038], [00039], [00043], [00050], [00051], [00055], [00056], [00057], [00061], of the Substitute Specification. In addition, new Claims 21-23 are supported by the specification at, e.g., paragraphs [00015], [00033], [00037], [00062]-[00066]. Applicant respectfully requests entry and allowance of the amended and new claims.

Claims Rejections - 35 U.S.C. § 103(a)

Claims 19 and 20 are rejected under 35 U.S.C. § 103(a) as being obvious over Batelaan in view of Holdcroft or Smith. Applicant has shown on page 5 of this paper that the phrase noncovalent forces is not new matter. Accordingly, Applicant again submits that Claims 19 and 20 are not obvious over Batelaan in view of Holdcroft or Smith. Neither Batelaan or the reference combined with Holdcroft or Smith teach or suggest each and every feature of amended Claims 19 and 20. Applicant also refers to previous arguments made regarding the lack of complexation in Batelaan. Furthermore, contrary to the Examiner's statement that "The calyx[4]arene may be complexed with nitrogen-containing compounds," Applicant point out that the "complex" referred to by the Examiner is not a complex but a chemical nitration reaction ("IPSO Nitration") in which nitro groups react with the calix(4)arene and replace tert-butyl groups of the calix(4)arene to create a functionalized calix(4)arene bound to a nitro group (preferably nitrostilbene group). In addition, and unlike Applicants' invention, the functionalized calix(4)arenes disclosed by Batelaan are made into conformations that are "non-interconvertible" (Col. 3, ll. 52-60). Moreover, the non-interconvertible functionalized calix(4) arene compounds of Batelaan do not operate as a switch unless they are functionalized with a dopant (having more than one donor- π -acceptor units, such as nitrostilbene groups, cyanostilbene groups, sulfor stilbene groups, sulfonated stilbene groups, azobenzenes or benzyldiene aniline compounds) and then embedded into a polymer to form an optical switch. As such, Batelaan's calixarenes do not form a complex nor do they have an optical behavior that relies on any type of complexation. In fact, in Batelaan, calixarenes do not complex nitrogen-containing compounds at all, but are chemically attached (functionalized covalently) to nitrogen-containing groups (Abstract; Col. 3, ll. 42-45). Accordingly, Applicant submits that Batelaan teaches away from Applicant's claimed invention by providing an entirely different compound and optical behavior. The inability of Batelaan to teach or suggest Applicant's claimed invention as a whole means that there is no suggestion or motivation, either in the Batelaan reference itself or to one of ordinary skill in the art, to modify Batelaan in order to provide amended Claims 19 or 20. Nor, then, is there any suggestion or motivation to combine Batelaan with any other reference, including Holdcroft or Smith. For this reason, there is no reasonable expectation of any success. In view of all factual information, amended Claims 19 and 20 and all claims depending therefrom are not, as a whole, obvious over Batelaan alone or in view of any references, including Holdcroft or Smith. Applicant respectfully requests the rejection under 37 C.F.R. §1.103(a) be removed and respectfully requests entry and allowance of amended Claims 19 and 20.

Conclusion

In light of the remarks and arguments presented with this Amendment, Applicant respectfully submits that the pending and new claims provided in the Listing of Claims beginning on page 2 of this paper are in condition for allowance. No new matter is introduced with this Amendment. Accordingly, favorable consideration for and allowance of all claims are respectfully requested.

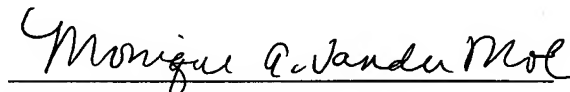
With this Amendment, Applicant submits a Petition for Extension of Time for three-month with fees due as well as excess claims fees. Applicant believes no additional fees are due with this response. If this is incorrect, Applicant hereby authorizes the Commissioner to charge the additional fees, other than the issue fee, that may be required by this paper to Deposit Account 07-0153.

Should the Examiner have any questions or comments, or if further clarification is required, it is requested that the Examiner contact the undersigned at the telephone number listed below.

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Respectfully submitted,

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